What is Claimed is:

1. A three-dimensional image pickup apparatus, comprising:

a plurality of light receiving elements for receiving and converting light into an electric signal; and

a plurality of light path selection elements for selecting an incoming angle of light to come to said light receiving elements;

said light receiving elements and said light path selection elements being arranged such that a plurality of pixels formed from said light receiving elements and said light path selection elements are disposed both in a row direction and a column direction;

intensities of the light received by said light receiving elements and the incoming angles of light selected by said light path selection elements being recorded in a coordinated relationship for the individual pixels.

2. A three-dimensional image pickup apparatus according to claim 1, wherein each of the pixels is formed from one of said light receiving elements and one of said light path selection elements which are paired with each other.

3. A three-dimensional image pickup apparatus according to claim 1, wherein the incoming angle of light selected by each of said light path selection elements varies as time passes.

4. A three-dimensional image pickup apparatus according to claim 1, wherein each of said light path selection elements is a reflecting element which drives a reflecting plate for reflecting light to select the incoming angle of light which comes to one of said light receiving elements so that the light of the incoming angle is light reflected by the reflecting plate.

5. A three-dimensional image pickup apparatus according to claim 4, wherein said reflecting element is a mirror plate, a Micro-Electro-Mechanical Systems element or a digital micromirror device (trade name) driven by a piezoelectric element.

6. A three-dimensional image pickup apparatus according to claim 1, wherein said light path selection elements are driving members which carry and drive said light receiving elements to vary the directions in which light receiving faces of said light receiving elements are directed.

7. A three-dimensional image pickup apparatus according to claim 1, wherein said light path selection

elements are lenses disposed in front of light receiving faces of said light receiving elements and drive said lenses to vary relative positions of said lenses to said light receiving elements.

8. A three-dimensional image pickup apparatus according to claim 1, wherein said light path selection elements are liquid crystal waveguides disposed in front of light receiving faces of said light receiving elements and selectively vary the refractive index of liquid crystal filled in said waveguides to select transmission paths of light.

9. A three-dimensional image pickup apparatus according to claim 1, wherein said light path selection elements are Mach-Zehnder elements disposed in front of light receiving faces of said light receiving elements and each selectively varies the refractive index of a phase control section provided in a light path to cause interference of light to select transmission paths of light.

10. A three-dimensional image pickup apparatus, comprising:

light intensity acquisition means for acquiring intensity information of received light; and

incoming angle acquisition means for acquiring

incoming angle information of the received light;

the intensity information and the incoming angle information of the light being recorded in a coordinated relationship with each other.

11. A three-dimensional display apparatus, comprising:

a plurality of light emitting elements for emitting light in accordance with an electric signal; and

a plurality of light path selection elements for selecting an outgoing angle of light to be emitted from said light emitting elements;

said light emitting elements and said light path selection elements being arranged such that a plurality of pixels formed from said light emitting elements and said light path selection elements are disposed both in a row direction and a column direction;

said light emitting elements emitting light in accordance with a coordinated relationship between the outgoing angles of light selected by said light path selection elements and the intensities of light for the individual pixels.

12. A three-dimensional display apparatus according to claim 11, wherein each of the pixels is formed from one of said light emitting elements and one

of said light path selection elements which are paired with each other.

13. A three-dimensional display apparatus according to claim 11, wherein the outgoing angle of light selected by each of said light path selection elements varies as time passes.

14. A three-dimensional display apparatus according to claim 11, wherein each of said light path selection elements is a reflecting element which drives a reflecting plate, and light emitted from each of said light emitting elements is reflected by one of said reflecting plates.

15. A three-dimensional display apparatus according to claim 14, wherein said reflecting element is a mirror plate, a Micro-Electro-Mechanical Systems element or a digital micromirror device (trade name) driven by a piezoelectric element.

16. A three-dimensional display apparatus according to claim 11, wherein said light path selection elements are driving members which carry and drive said light emitting elements to vary the directions in which light emitting faces of said light emitting elements are directed.

17. A three-dimensional display apparatus

according to claim 11, wherein said light path selection elements are lenses disposed in front of light emitting faces of said light emitting elements and drive said lenses to vary relative positions of said lenses to said light emitting elements.

18. A three-dimensional display apparatus according to claim 11, wherein said light path selection elements are liquid crystal waveguides disposed in front of light emitting faces of said light emitting elements and selectively vary the refractive index of liquid crystal filled in said waveguides to select transmission paths of light.

19. A three-dimensional display apparatus according to claim 11, wherein said light path selection elements are Mach-Zehnder elements disposed in front of light emitting faces of said light emitting elements and each selectively varies the refractive index of a phase control section provided in a light path to cause interference of light to select transmission paths of light.

20. A three-dimensional display apparatus, comprising:

light emission means for emitting light based on intensity information of light; and

outgoing angle selection means for selecting an outgoing angle of light to be emitted from said light emission means;

said light emission means emitting light in response to a coordinated relationship between the outgoing angle of light and the intensity information of light.

21. A three-dimensional image pickup and display apparatus, comprising:

a light reception section including a plurality of light receiving elements for receiving and converting light into an electric signal and a plurality of first light path selection elements for selecting an incoming angle of light to come to said light receiving elements, said light receiving elements and said first light path selection elements being arranged such that a plurality of pixels formed from said light receiving elements and said first light path selection elements are disposed both in a row direction and a column direction, intensities of the light received by said light receiving elements and the incoming angles of light selected by said first light path selection elements being coordinated with each other for the individual pixels to form video signals; and

a light emission section including a plurality of light emitting elements for emitting light in accordance with an electric signal and a plurality of second light path selection elements for selecting an outgoing angle of light to be emitted from said light emitting elements, said light emitting elements and said second light path selection elements being arranged such that a plurality of pixels formed from said light emitting elements and said second light path selection elements are disposed both in a row direction and a column direction, said light emitting elements emitting light in accordance with a coordinated relationship between the outgoing angles of light selected by said second light path selection elements and the intensities of light for the individual pixels based on the video signals.

22. A three-dimensional image pickup and display apparatus according to claim 21, wherein each of the pixels in said light reception section is formed from one of said light receiving elements and one of said light path selection elements which are paired with each other, and each of the pixels in said light emission section is formed from one of said light emitting elements and one of said light path selection elements which are paired with each other.

23. A three-dimensional image pickup and display apparatus according to claim 21, wherein the incoming angle selected by each of said first light path selection elements and the outgoing angle of light selected by each of said second light path selection elements vary as time passes.

24. A three-dimensional image pickup and display apparatus according to claim 21, wherein said light reception section and said light emission section are formed separately from each other.

25. A three-dimensional image pickup and display apparatus according to claim 24, wherein said light reception section and said light emission section are connected to each other for information exchange therebetween such that the video signals are transmitted from said light reception section to said light emission section.

26. A three-dimensional image pickup and display apparatus according to claim 21, wherein said light reception section and said light emission section are formed on the same face of the same apparatus.

27. A three-dimensional image pickup and display apparatus according to claim 21, wherein said light reception section and said light emission section are

formed on the opposite faces of the same apparatus.

28. A three-dimensional image pickup and display apparatus according to claim 21, wherein the incoming angle of light incoming to said light reception section and the outgoing angle of light outgoing from said light emission section are coordinated with each other.

29. A three-dimensional image pickup and display apparatus according to claim 21, wherein the incoming angle of light incoming to said light reception section and the outgoing angle of light outgoing from said light emission section are equal to each other.

30. A three-dimensional image pickup and display apparatus according to claim 21, wherein the incoming direction of light incoming to said light reception section and the outgoing angle of light outgoing from said light emission section are symmetrical to each other with respect to a normal direction to said light emission section.

31. A three-dimensional image pickup and display apparatus according to claim 21, wherein each of said first light path selection elements or said second light path selection elements is a reflecting element which drives a reflecting plate for reflecting light to vary the incoming angle of light to come to one of said light

receiving elements or vary the outgoing angle of light emitted from one of said light emitting elements.

32. A three-dimensional image pickup and display apparatus according to claim 31, wherein said reflecting element is a mirror plate, a Micro-Electro-Mechanical Systems element or a digital micromirror device (trade name) driven by a piezoelectric element.

33. A three-dimensional image pickup and display apparatus according to claim 21, wherein said first light path selection elements or said second light path selection elements are driving members which carry and drive said light emitting elements to vary the directions in which light receiving faces of said light receiving elements or light emitting faces of said light emitting elements are directed.

34. A three-dimensional image pickup and display apparatus according to claim 21, wherein said first light path selection elements or said second light path selection elements are lenses disposed in front of light receiving faces of said light receiving elements or light emitting faces of said light emitting elements and drive said lenses to vary relative positions of said lenses to said light receiving elements or said light emitting elements.

35. A three-dimensional image pickup and display apparatus according to claim 21, wherein said first light path selection elements or said second light path selection elements are liquid crystal waveguides disposed in front of light receiving faces of said light receiving elements or light emitting faces of said light emitting elements and selectively vary the refractive index of liquid crystal filled in said waveguides to select transmission paths of light.

36. A three-dimensional image pickup and display apparatus according to claim 21, wherein said first light path selection elements or said second light path selection elements are Mach-Zehnder elements disposed in front of light receiving faces of said light receiving elements or light emitting faces of said light emitting elements and each selectively varies the refractive index of a phase control section provided in a light path thereof to cause interference of light to select transmission paths of light.

37. An information recording method, comprising the steps of:

acquiring intensity information of received light;

acquiring incoming angle information of the received light; and

recording the intensity information and the incoming angle information of the light in a coordinated relationship with each other.